

NATANSON, T. A.

Med Effect of the properties of rubbers on the stretchiness of the
fabric. T. A. Natanson. *Textile Progr.* 17, No. 1, 15-4
(1957). ~~A discussion~~ *W. Barnard*

NATANSON, I. P.

"Sur la representation des fonctions aux points de continuite approximative
par des integrales singulieres," Fund. math., No.18, pp. 99-109, 1931

NATANSON, I. P.

"O slaboy skhodimosti singulyarnogo integrala s simmetricheskim yadrom,"
Izv. fis.mat. ob-va pri Kazanskom un-tse 6, pp. 23-27, 1932-33

NATANSON, I. P .

"Ob odnom svoystve integrala Dirikhle," Izv. fiz-mat. o-va pri
Kazanskom un-te 6, pp 28-32, 1932-33

NATANSON, I. P.

"Novyye dokazatel'stvo teoremy Vitali," Trudy Len. in-ta inzh. prom.
str-stva, vyp. 1, pp. 81-84, 1934

NATANSON, I. P.

"K voprosu o raslozhenii funktsii po ortogonalym polinamam," Izv. AS USSR,
Otdel. matem. i yest. nauk, No.1, pp. 85-88, 1933

NATANSON, I.P.

K teorii singulyarnykh integralov. L., Trudy in-ta inzh. prom. stroit., 1 (1934), 73-80.

Sur la representation des fonctions sommables par des integrales singulieres.

Matem. sb., 1 (43), (1936), 369-376.

O summirovani ryadov fur'e po metodu S.N. Bernshteyna i V. Rogozinskogo. L., Trudy industr. in-ta, razd. fiz-matem., 4:2 (1937), 39-44.

SO: Mathematics in the USSR, 1917-1947

edited by Kurosh, A.G.,

Markushevich, A.I.,

Rashevskiy, P.K.

Moscow-Leningrad, 1948

NATANSON, I.P. Continued

Nekotoryye neloikal'nyye teoremy o singulyarnykh integralakh. Dan, 14 (1938), 357-360

K teorii bernahteynovakogo sposoba summirovaniya ryadov fur'ye. L., Trudy in-ta tochn. mekh. i optiki, 1:3 (1940), 197-206.

Ob odnom sposobe summirovaniya integralov fur'ye. Matem. sb., 7 (49), (1940), 313-320.

O priznake Dini pri trigonometricheskom interpolirovanii. DAN, 42 (1944), 25-28.

Nekotoryye otsenki, svyazannyye s singulyarnym integralom Valle-Poussena. DAN, 45 (1944), 290-293.

On the convergence of trigonometrical interpolation at equidistant knots. Ann. of Math., 45 (1944), 457-471.

Prilozheniye integrala Valle-Poussena v teorii ryadov fur'ye. DAN, 49 (1945) 402-404.

SO: Mathematics in the USSR, 1917-1947

edited by Kurosh, A.G.,

Markushevich, A.I.,

Rashevskiy, P.K.

Moscow-Leningrad, 1948

NATANSON, I. P.

"O priznake Dini pri trigonometricheskom interpolirovanii," Dokl. AN
SSSR, 45, No. 7, pp. 290-293, 1944

NATANSON, I. P.

(Natanson, I. P. Sur la représentation approchée des fonctions vérifiant la condition de Lipschitz au moyen de l'intégrale de Vullé-Poussin. C. R. (Doklady) Acad. Sci. URSS (N.S.) 54, 11-13 (1946).

Let $f(x)$ be a function of period 2π satisfying the condition $|f(y) - f(x)| \leq |y - x|^\alpha$ ($0 < \alpha \leq 1$) and let

$$V_n[f; x] = \frac{1}{\pi} \frac{2 \cdot 4 \cdots 2n}{1 \cdot 3 \cdots (2n-1)} \int_{-\pi}^{\pi} f(t) \cos^{2n-1} \frac{1}{2}(t-x) dt.$$

Let furthermore $\Delta_n(f) = \max_x |V_n[f; x] - f(x)|$ and $U_n(\alpha) = \text{l.u.b.}_f \Delta_n(f)$. The author proves that

$$U_n(\alpha) = (2^\alpha/\pi)^{1/2} \Gamma((1+\alpha)/2) n^{-\alpha/2} + o(n^{-\alpha/2}), \quad 0 < \alpha \leq 1;$$

$$U_n(1) = 2/(n\pi)^{1/2} + o(n^{-1/2}), \quad -1 < \alpha < 1.$$

[In the integral at the bottom of p. 11, f should be replaced by t . There are several other minor misprints.]

M. Kac (Ithaca, N. Y.).

Source: Mathematical Reviews.

Vol. 3 No. 10.

Natanson, I. P. On an inequality. Doklady Akad. Nauk SSSR (N.S.) 86, 911-913 (1947). (Russian)

Let $f(x)$ be integrable in $[a, b]$, $F(x) = \int_a^x f(t)dt$, $|f(x)| \leq M(x-a)$ for $a < x \leq b$; $g(x)$ nonnegative, nonincreasing and integrable; the author proves the inequality

$$(*) \quad \left| \int_a^b f(x)g(x)dx \right| \leq M \int_a^b g(x)dx,$$

which he states is of use in studying the representation of functions by singular integrals. His proof (slightly modified) is as follows. Let $a < \alpha < \beta \leq b$; we have $\int_a^\alpha g(x)dx \leq (\alpha-a)g(\alpha)$. Then

$$\left| \int_a^\beta f(x)g(x)dx - g(\beta) \int_a^\beta f(x)dx \right| = \left| \int_a^\beta f(x)[g(x) - g(\beta)]dx \right|$$

$$\leq \left| F(\alpha)[g(\alpha) - g(\beta)] \right| + \left| \int_\alpha^\beta F(x)d[-g(x) + g(\beta)] \right|$$

$$\leq M(\alpha-a)g(\alpha) + M \int_\alpha^\beta (x-a)d[-g(x) + g(\beta)]$$

$$\leq 2M \int_\alpha^\beta g(x)dx + M \int_\alpha^\beta g(x)dx - Mg(\beta)(\beta-\alpha).$$

Letting α and β approach a , we see that $\int_a^b f(x)g(x)dx$ exists. Taking $\beta = b$ and letting $\alpha \rightarrow a$, we obtain

$$\left| \int_a^b f(x)g(x)dx \right| \leq M \int_a^b g(x)dx + g(b)[F(b) - M(b-a)],$$

which is a little stronger than (*). R. P. Boas, Jr.

Source: Mathematical Reviews, 1948, Vol 9, No. 3

NATANSON, I. P.

4

Natanson, I. P. On the summability of the Fourier series
of a function of bounded variation. (Doklady Akad.
 Nauk SSSR (N.S.) 37, 13-15 (1947). (Russian)
 Let $K_n(t)$ be a continuous and continuously differentiable
 function of period 2π , and such that $\lim_{n \rightarrow \infty} \int_{-\pi}^{\pi} K_n(t) dt = 1$
 for every $0 < \alpha \leq \pi$, $0 < \beta \leq \pi$. Let $f_n(x) = \int_{-\pi}^{\pi} f(t) K_n(x-t) dt$.
 The author proves the following two results: (1) If
 $\int_{-\pi}^{\pi} |K_n(t)| dt = O(1)$, then the total variation over $(0, 2\pi)$ of
 $f_n - f$ approaches 0 as $n \rightarrow \infty$. (2) Suppose that, for every
 $f(x)$ of bounded variation and with regular discontinuities,
 $\lim_{n \rightarrow \infty} f_n(x) = f(x)$, and that $\int_{-\pi}^{\pi} |K_n(t)| dt \rightarrow 1$. Then the
 total variation of f_n over $(0, 2\pi)$ tends to f . Both results
 are well known in the case when $K_n(t)$ is a positive kernel
 (like Fejér's or Poisson's). [Ad (1) see A. Plessner, J. Reine
 Angew. Math. 160, 26-32 (1929), in particular, p. 28; ad (2),
 Evans, The Logarithmic Potential, Amer. Math. Soc. Collo-
 quium Publ., v. 5, New York, 1927, p. 39.]

A. Zygmund (Chicago, Ill.)

Summability

Source: Mathematical Reviews, 1948, Vol 9, No. 5

NATANSON, I.P.K. TEORIY

25344

Priblishennogo Resneniya Uravneniy Uchen. Zapiski (Leningr. Gos. Ped.
In-T Im Uettsena) T. LXIV, 1948, S. 3-8

SO: LETOPIS NO. 30, 1948

NATANSON, I.P.

One class of linear operators in Hilbert space. Uch. zap. LGU no.96:
174-188 '62. (MLBA 10:2)

(Functional analysis) (Hilbert space)

NATANSON, I. P.

Natanson, I. P. Konstruktivnaya teoriya funktsii. [Constructive theory of functions]. Gosudarstvennoe Izdatel'stvo Tekhniko-Teoriticheskoi Literatury, Moscow-Leningrad, 1949. 688 pp.

Uniform approximation: Weierstrass's theorem; Algebraic polynomials of best approximation; Trigonometric polynomials of best approximation; Influence of the structural properties of a function on the degree of its approximation by trigonometric polynomials. Characteristic structural properties of a function and the general behavior of its best approximation by trigonometric polynomials. Connection between the structural properties of a function and its approximation by algebraic polynomials. Fourier series as a means of approximation. Fejer and Vallée Poussin sums. Best approximation of analytic functions. Properties of some analytic approximation methods. Quadratic approximation. Space $L_2(x)$. Orthogonal systems. Linear independence of systems of functions. General properties of orthogonal polynomials. Legendre polynomials. Jacobi polynomials. Moment problem for a finite interval. Case of an infinite interval. Integration and mechanical quadratures. Various aspects of interpolation. Results of a negative character. Convergence of interpolation processes. Some other

Various aspects of interpolation. Results of a negative character. Convergence of interpolation processes. Some convergent processes related to interpolation. Mechanical quadratures. Supplementary material on the theory of mechanical quadratures. Table of contents.

Source: Mathematical Reviews, 1950 Vol. 11 No. 8

IVATANSON, I. P.

Vankov, B. A., and Natanson, I. P. Obituary: Rodion Osievich Kur'min (1891-1949). Uspehi Matem. Nauk (N.S.) 4, no. 4(32), 143-155 (1 plate) (1949). (Russian)

(N.S.) 4, no. 4(32), 143-155 (1 plate) (1949). (Russian)

Source: Mathematical Reviews, 1950 Vol. 11 No. 8

NATANSON, I.P.

27490. VENKOV, B.A., NATANSON, I.P.-Bibliografiya. (Annotir. Sliksok literatury po ogneporam. 1948-1949). Sost. Tsentr. nauch.-tekhn. E-koy metallurg. Prom-sti. Ognepory, 1949, No. 8, S. 375-76.

SO: Letopis'Zhurnal'nykh Statey, Vol. 36, 1949.

NATANSON, I. P.

0692. Natanson, I. P., Theory of functions of a real variable (Teoriya funktsii i mnogoizmennoi peremennoi), Moscow-Leningrad, Gostizdat Tekhn.-Teor. Lit., 1960, 399 pp.

Questions such as Lebesgue integrals, quadratic measurability of functions, role of singular integrals in the theory of Fourier series, absolute continuity of functions, and others, become more and more significant in problems of modern engineering and mathematical physics. This excellent textbook by the well-known specialist is one of few convenient books where an engineer can readily learn these mathematical facts. Being intended for Russian high schools, the work gives to technicians, nevertheless, in its 17 chapters, all that is necessary in a correct and vivid presentation.

First three sections contain a short introduction to theory of sets (including fundamental concept of measure); then come four chapters on measurable functions, on Lebesgue's integral of a bounded function, and on the Lebesgue measurability. The eighth main part treats functions with finite variation, explains the concept of Stieltjes' integral and of linear functional. Then follows a chapter on absolute continuity and on indefinite integral of Lebesgue, while the tenth section deals with singular integrals and trigonometric series.

The next three main parts concern point sets in two-dimensional spaces, with integration of measurable functions of many variables and with the role of set functions in the generalized theories of integration. Next two sections are of special character, dealing with the theory of transfinite numbers and with the classification of Baire. Of importance is chapter 17 containing many useful facts on abstract spaces. The last section shows contribution of Russian concepts to the theory of functions of real variables.

The book is, without doubt, one of the best of its kind. It is warmly recommended to mathematicians and engineers.

V. Vodička, Czechoslovakia

NATANSON, I. P.

Natanson, I. P. On the degree of approximation to a continuous function of period 2π by means of its Poisson integral. Doklady Akad. Nauk SSSR (N.S.) 72, 11-14 (1950). (Russian)

Let $f(x)$ be a continuous function of period 2π , let $\omega(\delta)$ be the modulus of continuity of f , and let $P(x, r)$ be the Poisson integral of f . Let $0 < r_0 < 1$. Then for all x and for $r_0 \leq r \leq 1$,

$$|P(x, r) - f(x)| \leq K\omega[(1-r)/|\log(1-r)|],$$

where K depends on r_0 only. Let Lip_α be the class of functions f such that $|f(x) - f(y)| \leq |x - y|^\alpha$, and let $u(\alpha, r) = \sup_x |P(x, r) - f(x)|$ for all x and all $f \in \text{Lip}_\alpha$. Then for $r \rightarrow 1$ we have the asymptotic formulas

$$u(1, r) = 2\pi^{1-\alpha}(1-r) \log(1-r) + O(1-r),$$

$$u(\alpha, r) = (1-r)^\alpha \sec \frac{1}{2}\pi\alpha + O(1-r), \quad 0 < \alpha < 1.$$

A. Zygmund (Cambridge, Mass.)

Source: Mathematical Reviews,

Vol. 11, No. 4

NATANSON, I. P.
Natanson, I. P.

Natanson, I. P. On the accuracy of representation of continuous periodic functions by singular integrals. Doklady Akad. Nauk SSSR (N.S.) 71, 273-276 (1950). (Russian)
Let $f(t)$ be of period 2π and continuous. Let

$$f_n(x) = \int_{-\pi}^{\pi} f(t) \Phi_n(t-x) dt,$$

where $\Phi_n(t)$ is of period 2π , positive, even, and such that $\int_{-\pi}^{\pi} \Phi_n(t) dt = 1$, and $\Delta_n = \int_{-\pi}^{\pi} t^2 \Phi_n(t) dt$ tends to 0 as $n \rightarrow \infty$ (this condition is satisfied by the kernels of Poisson, Fejér, Jackson, and de La Vallée-Poussin). The author shows that if $f(t)$ has modulus of continuity $\omega(\delta)$, then $|f_n(x) - f(x)| \leq 3\omega(\delta_n)$. The assumptions concerning Φ_n imply that the sequence $\Delta_n = \int_{-\pi}^{\pi} t^2 \Phi_n(t) dt$ tends to 0. Let us assume that for every fixed σ , $0 < \sigma < \pi$, we also have $\int_{-\pi}^{\pi} t^2 \Phi_n(t) dt = o(\Delta_n)$. Then, for every $f(t)$ continuous at $t = x$, there is a finite number $f^*(x)$ such that $f_n(x) = f(x) + f^*(x)\Delta_n + o(\Delta_n)$. A. Zygmund.

Source: Mathematical Reviews,

Vol. 12, No. 2.

- [illegible]

NATANSON, I. P.

Natanson, I. P. On a class of singular double integrals.
 Doklady Akad. Nauk SSSR (N.S.) 81, 737-739 (1951).
 (Russian)

Let $\Phi(u)$ and $\Psi(v)$ be two continuous and even functions of period 2π , such that $\int_{-\pi}^{\pi} \Phi(u) du = \int_{-\pi}^{\pi} \Psi(v) dv = 1$. We suppose that the numbers $\lambda_n = \int_{-\pi}^{\pi} u \Phi_n(u) du$ and $\mu_n = \int_{-\pi}^{\pi} v \Psi_n(v) dv$ tend to 0 as $n \rightarrow \infty$. Let $f(x, y)$ be any continuous function of period 2π in x and y , and let $\omega(\lambda, \mu)$ be the modulus of continuity of f , that is $\omega(\lambda, \mu) = \sup |f(x+h, y+k) - f(x, y)|$ for all $x, y, |h| \leq \lambda, |k| \leq \mu$. Let

$$f_{nm}(x, y) = \int_{-\pi}^{\pi} \int_{-\pi}^{\pi} f(u, v) \Phi_n(u-x) \Psi_n(v-y) du dv.$$

The author shows that $|f_{nm}(x, y) - f(x, y)| \leq 5\omega(\lambda_n, \mu_n)$.
 A. Zygmund (Chicago, Ill.)

Smul

Source: Mathematical Reviews,

Vol 13 No. 6

ALEKSANDROV, A.D.; AKILOV, G.P.; ASHNEVITS, I.Ya.; VALLANDER, S.V.;
VLADIMIROV, D.A.; VULIKH, B.Z.; GABURIN, M.K.; KANTOROVICH, L.V.;
KOLBINA, L.I.; LOZIESKIY, S.M.; LADYZHENSKAYA, O.A.; LINNIK, Yu.V.;
LEBEDEV, N.A.; MIKHILIN, S.G.; MAKAROV, B.M.; MATKSON, I.P.;
NIKITIN, A.A.; POLYAKHOV, N.N.; PIESKER, A.G.; SMIRNOV, V.I.;
SAFRONOVA, G.P.; SMOLITSKIY, Kh.L.; PADDEYEV, D.K.

Grigori Mikhailovich Fikhtengol'ts; obituary. Vest. LGU 14 no.19:
158-159 '59. (MIRA 12:9)
(Fikhtengol'ts, Grigori Mikhailovich, 1888-1959)

NATANSON, I. F.

Prosteishie zadachi na maksimum i minimum /Simple problems in maximum and minimum functions/. Izd. 2-e. Moskva, Gostekhizdat, 1952. 32 p. (Popul. lektsii po matematike. Vyp. 2)

SO: Monthly List of Russian Accessions, Vol. 7, No. 3, June 1954.

NATANSON, I. P.

USSR/Mathematics - Approximation

21 Jan 52

"Approximation to Multiply Differential Periodic Functions by Means of Singular Integrals," I. P. Natanson

"Dok Ak Nauk SSSR" Vol LXXXII, No 3, PP 337-339

Establishes 3 theorems relating periodic functions and their partial derivs in the form of various inequalities important in approximations. Submitted by Acad S. N. Bernshteyn 24 Nov 51.

211973

NATANSON, I.P.; AKILOV, G.P., redaktor; VOLCHOK, K.M., tekhnicheskiy
redaktor.

[Summation of infinitely small values] Summirovaniye beskonечно
malykh velichin. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry, 1953.
54 p. (Populiarnye lektsii po matematike, no. 12) (MLRA 7:8)
(Calculus, Integral)

Mathematical Review
June 1954
Numerical and Graphical
Methods

Dychev, R. I., Kuznetsov, Ya. T., Kuznetsov, I. P., and
Kuznetsov, E. A. On approximation computation of
definite integrals by means of a multiplicative method of
containing singularity. *Atad. Nauk SSSR. Fiz. Mat.*
Mek. 17, 639-644 (1963). (Russian)

This paper extends Gauss's method of numerical integra-
tion to the case of functions having certain types of singu-
larities in the interval of integration. The method developed
here applies to the case where the integrand can be written
as a product of the form $|x|^a f(x)$ in which $f(x)$ is contin-
uous and a lies in the interval $-1 < a < 0$. As is well known,
one may approximate the integral by a sum of the form
 $\sum_{i=1}^n A_i f(x_i)$ in which the A_i 's are constants and the x_i 's are
zeros of a polynomial $w_n(x)$ of degree n , where the set of
polynomials $w_0(x), w_1(x), \dots, w_n(x)$ are orthogonal with
weight function $|x|^a$ for the given interval of integration.
Such polynomials can be constructed by a three-term re-
currence relation. The author obtains the orthogonal poly-
nomials through the eighth degree and tabulates values of
the A_i 's and x_i 's for $a = -\frac{1}{2}, -\frac{1}{3}, -\frac{1}{4}, -\frac{1}{5}$ and $-\frac{1}{6}$.

W. E. Milne (Corvallis, Ore.).

NATANSON, I.P.

Mathematical Reviews
Vol. 15 No. 3
March 1954
Analysis

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Math
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Math. I.P. Natanson On convergence of certain interpolation processes for functions of two arguments. *Mat. Sbornik* N.S. 35(77), 219-232 (1953). (Russian)

Let $x_i^{(m)} = 2\pi i / (2m+1)$ for $i=0, 1, 2, \dots$ and $i=0, \pm 1, \pm 2, \dots$. For a given function $f(x, y)$ of period 2π in x and y integrable R over any finite square, let $T_{n,n}(x, y)$ be the trigonometric polynomial of order $\leq n$ in x and order $\leq n$ in y , coinciding with f at the points $(x_i^{(m)}, y_j^{(m)})$. Such a polynomial exists and is unique. The main result of the paper asserts that $T_{n,n}(x_0, y_0) \rightarrow f(x_0, y_0)$ as n and m tend to infinity, provided the following conditions are satisfied:

- a) there exists a function $\phi(x, y)$ defined in the square $Q = [x_0 - \pi \leq x \leq x_0 + \pi; y_0 - \pi \leq y \leq y_0 + \pi]$ such that
- $$|f(x, y) - f(x_0, y) - f(x, y_0) + f(x_0, y_0)| \leq \phi(x, y) |x - x_0| |y - y_0|;$$
- b) the function $\phi(x, y)$ decreases as x moves away from x_0 and y away from y_0 ; c) the integral $\int_0^{2\pi} \int_0^{2\pi} \phi(x, y) dx dy$ (possibly improper) is finite; d) there exist functions $\phi_1(x)$ and $\phi_2(y)$ defined respectively in the intervals $(x_0 - \pi, x_0 + \pi)$ and $(y_0 - \pi, y_0 + \pi)$ decreasing as x moves away from x_0 and y from y_0 , integrable over the intervals of definition and such that

$$\begin{aligned} |f(x, y) - f(x_0, y)| &\leq \phi_1(x) |x - x_0|, \\ |f(x_0, y) - f(x_0, y_0)| &\leq \phi_2(y) |y - y_0|. \end{aligned}$$

This result is an analogue of the very well known extension to double Fourier series of the Dini test. The more complicated form of the extension is apparently essential; at least it is so in the one-dimensional case as proved previously by the author [see C. R. (Doklady) Acad. Sci. USSR (N.S.) 42, 52-56 (1944); these Rev. 4, 125]. *A. Zygmund*

NATHANSON, J. P.

Nathanson, J. P. On expansion of functions of two variables
in series of orthogonal polynomials of a simple type.
Doklady Akad. Nauk SSSR (N.S.) 91, 1275-1277 (1953).
(Russian)

1/2

The polynomials of the title are of the form

$$u_{n,m}(x, y) = \varphi_n(x) \psi_m(y) \quad (n, m = 0, 1, 2, \dots),$$

where the φ_n and ψ_m form orthonormal systems of polynomials with respect to weights $p(x)$ and $q(y)$, integrable and positive almost everywhere in the intervals $a \leq x \leq b$, $c \leq y \leq d$, respectively. Suppose $f(x, y)$ is integrable with respect to the weight $K(x, y) = p(x)q(y)$ on the rectangle $R = [a, b] \times [c, d]$. The principal result is that f is expandable in the series

$$\sum_{n,m} c_{n,m} u_{n,m}(x, y), \quad c_{n,m} = \int_a^b \int_c^d K(x, y) f(x, y) u_{n,m}(x, y) dx dy$$

at a point (x, y) , where $\varphi_n(x)$ and $\psi_m(y)$ are uniformly bounded, provided

OVER

I. P. NATANSON

$$\int_0^1 \int_0^1 K(u, v) \left[\frac{f(u, v) - f(u, y) - f(x, v) + f(x, y)}{(u-x)(v-y)} \right] du dv$$

2/2

$$\times du dv < +\infty,$$

$$\int_0^1 \phi(u) \left[\frac{f(u, y) - f(x, y)}{u-x} \right] du < +\infty,$$

$$\int_0^1 \psi(v) \left[\frac{f(x, v) - f(x, y)}{v-y} \right] dv < +\infty.$$

G. Klein (So. Hadley, Mass.).

Natanson, I. P.

G E R M .

*Natanson, I. P., Theorie der Funktionen einer reellen

Variable. Akademie-Verlag, Berlin, 1954. VI +

478 pp. DM 26.00.

Translation of the author's Teoriya funktsii odnoimennoi
peremennoi [Gostehizdat, Moscow, 1950; these Rev. 12,
598].

*Real variable
or function*

Good.

11/2

HATANSON, I.P.

On a two-dimensional moment problem. Vest.Len.un.9 no.5:35-40 My '54.
(Moments of inertia) (Functions) (MLRA 9:7)

Natanson, I. P.

✓ 714 Theory of Functions of a Real Variable. I. P. Natanson. (Translated from the Russian by Leo P. Boron.) 277 p. 1955. Frederick Ungar Publishing Co., New York. (QA331.5 N49t)

✓ Classical treatment of infinite, point, and measurable sets; measurable, summable, and square-summable functions; the Lebesgue integral of a bounded function; functions of finite variation; and absolutely continuous functions.

LFH *SPW*

NATANSON, I. P.

✓ NATANSON, I. P., Konstruktive Funktionentheorie (Mathematische
Lehrbücher und Monographien, 7) (translated from the Russian by K.
Böhl), Berlin, Akademie-Verlag, 1953, xiv + 314 pp. DM 36.

Translation of Title: Constructive Functions Theory
(Mathematical Textbooks and Monographs,
7) Translated from Russian.

NATANSON, Isidor Pavlovich; AKILOV, G.P., red.; VOLCHOK, K.M., tekhn.red.

[Summation of infinitely small quantities] Summirovaniye beskonечно
malykh velichin. Isd.2., ispr. Moskva, Gos.isd-vo tekhniko-teoret.
lit-ry, 1956. 54 p. (Populiarnye lektsii po matematike, no.12)
(Mathematical analysis) (MIRA 12:4)

NATANSON I. P.

Call Nr: AF 1108825

Transactions of the Third All-union Mathematical Congress (Cont.) Moscow, Jun-Jul '56, Trudy '56, V. 1, Sect. Rpts., Izdatel'stvo AN SSSR, Moscow, 1956, 237 pp.

Natanson, I. P. (Leningrad). Generalization of the Theorem of P. I. Romanovski on Singular Integrals as a Case of Stieltjes Integrals.

92

Natanson, G. I. (Leningrad). Some questions of Function Approximation by Sturm-Liouville Functions.

92-93

Natanson, I. P. (Leningrad). Supplement to the Hausdorff Theorems on Moment Sequences.

93-94

Ogiyevetskiy, I. I. (Dnepropetrovsk). On the Theory of Summation of Multiple Number Series.

94

There are 2 references, 1 of which is USSR, and the other English.

Ogiyevetskiy, I. Ye. (Dnepropetrovsk). Some Tauberian Theorems on Sequences With Bounded Slow Oscillations.

94

There are 3 references, 1 of which is USSR, 1 Danish and 1 German.
Card 29/80

Natanson, I. P.

Mathematics

Doc. 1/1 Jan. 28 - 1955

Author : Natanson, I. P.

Title : In addition to Hausdorff's theorems on moment sequences

Published : Dokl. Akad. Nauk SSSR, 195-196, Jan 11, 1955

Abstract : Proof of a series of theorems is presented. The theorems may be considered as additional theorems to Hausdorff's theorems on moment sequences. Two references: 1 USSR, 1 Germ. (1923-1953).

Institution : Leningrad Structural Engineering Institute

Presented by: Academician V. I. Smirnov, October 17, 1955

~~NATANSON, Isidor Pavlovich~~; AKILOV, G.P., redaktor; VOLCHOK, K.M., tekhnicheskii redaktor.

[Theory of functions of real variables] Teoriia funktsii
veshchestvennoi peremennoi. Issledovanie, pererab. Moskva, Gos. izd-vo
tekhniko-teoret. lit-ry, 1957. 552 p. (MIRA 10:11)
(Functions of real variables)

Natanson, I. P.

AUTHOR: NATANSON, I. P., NATANSON, G. I.

42-5-10/17

TITLE: On the Relations Between Restricted and Wide Integrals of Denjoy (K vsaimootnosheniyu meshdu uskim i shirokim integralami Danshua)

PERIODICAL: Uspekhi Matematicheskikh Nauk, 1957, Vol. 12, Nr. 6, pp. 161-168 (USSR)

ABSTRACT: As is well known, the integral of Denjoy-Khinchin (D^*) is more general than that of Denjoy-Perron (D_*). The authors show that for every $\xi < \Omega$ there always holds $D_\xi \subset D^\xi$, where D_ξ and D^ξ are defined by

$$D_* = \sum_{\xi < \Omega} D_\xi, \quad D^* = \sum_{\xi < \Omega} D^\xi \quad (D_0 \subset D_1 \subset \dots \subset D^0 \subset D^1 \subset \dots).$$

In a certain sense this result is definitive. Finally for $\xi < \Omega$ the relation

$$D^{\xi+1}([a, b]) - \{D_{\xi+1}([a, b]) + D^\xi([a, b])\} \neq 0$$

is proved.

Three Soviet references are quoted.

SUBMITTED: December 7, 1956

AVAILABLE: Library of Congress
Card 1/1

NATANSON, I.P.

AUTHOR: KANTOROVICH, L.V., NATANSON, I.P. 43-7-1/18

TITLE: Grigoriy Mikhaylovich Fikhtengol'ts (on his 70th birthday)
(Grigoriy Mikhaylovich Fikhtengol'ts (a semidnyatiletlyu so dnya rozhdeniya))

PERIODICAL: Vestnik Leningradskogo Universiteta, Seriya Matematiki, Mekhaniki i Astronomii, 1958, Nr 7 (2), pp 5-13 (USSR)

ABSTRACT: This paper consists of seven sections. 1. Short career of life of Fikhtengol'ts, born 1888; 2. his papers on real functions being representable as integrals with a parameter; 3. his papers on the superposition of absolutely continuous real functions, on extremal values of continuous and additive set functions and on the closedness and completeness of function systems; 4. his papers on the representability of harmonic and holomorphic functions, respectively, by Poisson-Stiltjes and Cauchy integrals respectively; 5. his papers on functional analysis; 6. his book of higher analysis (3 volumes - 2500 pages) and other books; 7.8.9. his pedagogic, organizing and public activity. The paper contains a photo of Fikhtengol'ts and a list of publications of 39 papers, 21 of which are Slavic.

AVAILABLE: Library of Congress
Card 1/1 1. Biography 2. Mathematics 3. Functions-Theory

NATANSON, I P

43-7-11/18

AUTHOR: NATANSON, I. P.

TITLE: On an Extremal Problem for Increasing Polynomials (Ob odnoy ekstremal'noy zadache o vozrastayushchikh mnogochlenakh)

PERIODICAL: Vestnik Leningradskogo Universiteta, Seriya Matematiki, Mekhaniki i Astronomii, 1958, Nr 7 (2), pp 103-108 (USSR)

ABSTRACT: Let $P(x) = Ax^n + \dots$ be a polynomial of n -th degree, $n=2m+1$.

Let $J = \int_0^{+\infty} e^{-x} P(x) dx$. Out of all $P(x)$ of the above form,

$P(x) = (2m+1)A \int_0^x \left[e^t \frac{d^m(t^m e^{-t})}{dt^m} \right]^2 dt$ gives the smallest value

to the integral J , namely the value $(2m+1)(m!)^2 A$.

Let $P(x) = Ax^n + Bx^{n-1} + \dots$. Then $J_{\min} = \alpha_m^2 + \alpha_{m-1}^2$,

$\alpha_m = \pm \sqrt{(2m+1)A \cdot m!}$, $\alpha_{m-1} = \frac{B + (2m+1)mA}{\alpha_m} (m!)^2$, and it is

reached for

$$P(x) = \int_0^x \left[\alpha_m L_m(t) + \alpha_{m-1} L_{m-1}(t) \right]^2 dt,$$

Card 1/2

On an Extremal Problem for Increasing Polynomials

43-7-11/18

where $L_k(x) = \frac{(-1)^k}{k!} e^x \frac{d^k(x^k e^{-x})}{dx^k}$.

Let $P(x) = Ax^n + Bx^{n-1} + Cx^{n-2} + \dots$ with A,B,C given fixed.
Here also exists a unique polynomial which gives a minimum of J.

Similar problems are given and solved, if $P(x)$ is increasing only on the positive axis or if $J = \int_a^b \varphi(x)P(x)$, where $\varphi(x)$ is a given summable function.

The method bases on the decomposition $P' = M^2 + N^2$, where M is a polynomial of m-th degree and N is a polynomial of at most m-1st degree and on the joining representation by Laguerre's polynomials.

1 Soviet reference is quoted.

SUBMITTED: 13 January 1958
AVAILABLE: Library of Congress
Card 2/2

1. Polynomials 2. Functions-Theory

NATANSON, I. P.

16(0) PHASE I BOOK EXPLOITATION SOV/3177

Matematika v SSSR za srook let. 1917-1957. tom 1: Obzor nye stat. 1
(Mathematics in the USSR for Forty Years. 1917-1957) Vol. 1
(Series: Articles) Moscow, Fizmatgiz, 1959. 1002 p. 5,500 copies
printed.

Eds: A. G. Kurosh, (Chief Ed.), V. I. Ityutkov, V. G. Matyasevich,
Ya. B. Dyukin, G. Ye. Shilova, and A. P. Yushkevich; Ed. (Inside
book): A. P. Lepko; Tech. Ed.: S. M. Ansharov.

PURPOSE: This book is intended for mathematicians and historians
of mathematics interested in Soviet contributions to the field.

COVERAGE: This book is Volume I of a major 2-volume work on the
history of Soviet mathematics. Volume I surveys the chief con-
tributions made by Soviet mathematicians during the period 1917-
1957; Volume II will contain a bibliography of major works since
1957; also biographic sketches of some of the leading mathema-
ticians. This work follows the tradition set by two earlier
works: Matematika v SSSR za pyatnadset' let (Mathematics in
the USSR for 15 Years) and Matematika v SSSR za tridtsat' let
(Mathematics in the USSR for 30 Years). The book is divided
into the major divisions of the field, i.e., algebra, topology,
theory of probabilities, functional analysis, etc., and con-
tributions and outstanding problems in each discussed. A list-
ing of some 1400 Soviet mathematicians is included with refer-
ences to their contributions in the field.

Levin, S. M., and I. P. Natanson Metric and Constructive
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5. Direct and converse theorems of the constructive
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9. The theory of differentiable functions of many
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MATANSON, Isidor Pavlovich; AKILOV, G.P., red.; POL'SKAYA, R.O., tekhn.red.

[Very simple problems on the maximum and minimum] Prosteishie
zadachi na maksimum i minimum. Moskva, Gos.izd-vo fiziko-matem.
lit-ry, 1960. 29 p. (Populiarnye lektsii po matematike, no.2).
(Maxima and minima) (MIRA 13:8)

NATANSON, Isidor Pavlovich; AKILOV, G.P., red.; POL'SKAYA, R.G.,
~~tekhn. red.~~

[Summation of infinitesimal quantities] Summirovaniye beskonечно
malykh velichin. Izd. 3., ispr. Moskva, Gos. izd-vo fiziko-matem.
lit-ry, 1960. 54 p. (Populiarnye lektsii po matematike, no. 12)
(MIRA 14:6)

(Calculus)

NATANSON, I.P. (Leningrad)

Peano curves. Mat.pros. no.6:227-235 '61.
(Curves, Plane)

(MIRA 15:3)

AKILOV, G.P.; VULIKH, B.Z.; GAVURIN, M.K.; ZALGALLER, V.A.; NATANSON,
I.P.; PINSKER, A.G.; FADDEYEV, D.K.

Leonid Vital'evich Kantorovich; on his 50th birthday. Usp.
mat.nauk 17 no.4:201-215 '62. (MIRA 15:8)
(Kantorovich, Leonid Vital'evich, 1912-)

NATANSON, Isidor Pavlovich; AKILOV, G.P., red.; ROZENGAUZ, N.M.,
red.; LUK'YANOV, A.A., tekhn. red.

[Short course of higher mathematics] Kratkii kurs vysshei
matematiki. Moskva, Fizmatgiz, 1963. 748 p. (MIRA 16:10)
(Mathematics)

AKILOV, G.P.; VLADIMIROV, D.A.; KANTOROVICH, L.V.; NATANSON, I.P.

Boris Zakharovich Vulikh, 1913 - ; on his 50th birthday. Usp.
mat. nauk 18 no.6:242-243 '63. (MIRA 17:3)

NATANSON, I.P.

Continuity of Radon's integral as a function of the parameter.

Dokl. AN SSSR 150 no.6:1225-1227 Je '63.

(MIRA 16:3)

1. Predstavleno akademikom V.I.Smirnovym.

(Integrals, Generalized)

NATANSON, I.P. (Leningrad,

Gibbs' phenomenon in the general theory of singular integrals.
Izv. vys. ucheb. zav. mat. no. 3 93-99 '64. (MIR) 17.12.

NATANSON, I.P.

Classes of saturation in the theory of singular integrals. Dokl. AN
SSSR 158 no.3:520-523 S '64. (MIRA 17:10)

1. Leningradskiy gosudarstvennyy universitet im. A.A.Zhdanova. Pred-
stavleno akademikom V.I.Smirkovym.

MYSOVSKI KH, I.P.; NATANSON, I.P. [deceased]

Sergei Mikhailovich Lozinskii; 1914 - ; on his 50th birthday.
Usp. mat. nauk 19 no.6:207-212 N-D '64 (MIRA 18:2)

1ST AND 2ND GROUPS										3RD AND 4TH GROUPS									
PROCESSING AND PROPERTY INDEX																			
SA 234. Some Properties of Groups of Wave Motions, L. Natanson. Acad. Polonaise Sci et Lettres, Bull. 4-3A pp. 213-223, April-May, 1929. In English. Considers the subject of group propagation, with reference to L. de Broglie's treatise on Wave-Mechanics. H. N. A.																			
430-51.4 METALLURGICAL LITERATURE CLASSIFICATION										1ST GROUP									
1ST GROUP										2ND GROUP									

1619. **Kikkoni Vector Theorem and Fermat's Principle.** L. Neumann. *Acad. Polonaise, Sci. et Lettres, Bull. 48.* pp. 401-405. 1955. In English.

The author introduces an auxiliary theorem in order to shorten and coordinate the calculations. If a curve S is regarded as representing a ray or path of propagation of light it is also assumed that S is orthogonal everywhere to surfaces of constant phase. A vector V localized in the tangent to the ray is said to represent the velocity of phase propagation if it satisfies the condition laid down in certain equations. A series of equations is evolved and a scalar function introduced and called by the name of Eikonal. The author's object in his discussion is to generalize the differential equation equivalent to Fermat's principle. When certain conditions are fulfilled the Eikonal vector theorem applies and the differential equation expressing Fermat's principle is true. T. C. H.

APPROVED FOR RELEASE: 03/13/2001

CIA-RDP86-00513R001136120010-6"

1877. Theorems Connected with Fermat's Principle. L. Neuman, Acad. Polonaise Sci. et Lettres, Bull. R. A. pp. 421-431, Oct., 1900. A number of mathematic theorems are derived related to Fermat's principle and the Maupertuis principle of least action. An analogy between the equations of equilibrium of a stretched cord subjected to the action of continuously applied forces, and the equations of motion of a material point, suggests an interpretation of the motion of the latter as the equilibrium position of a trajectory to the adjacent elements of which are applied the forces which act on the particle in successive instants. This analogy is established quantitatively. W. S. S.

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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3106. General Propositions Involving Fermat's Principle and Allied Theorems. L. Natanson. *Acad. Polonaise Sci. et Lettres, Bull.* 7-104. pp. 612-622, July-Dec., 1931. In English.—A mathematical scheme is constructed for the convenient expression of Fermat's theorem. This is then applied to geometrical optics, electrostatics and the mechanics of particles.
W. S. S.

COMMON VARIABLES INDEX

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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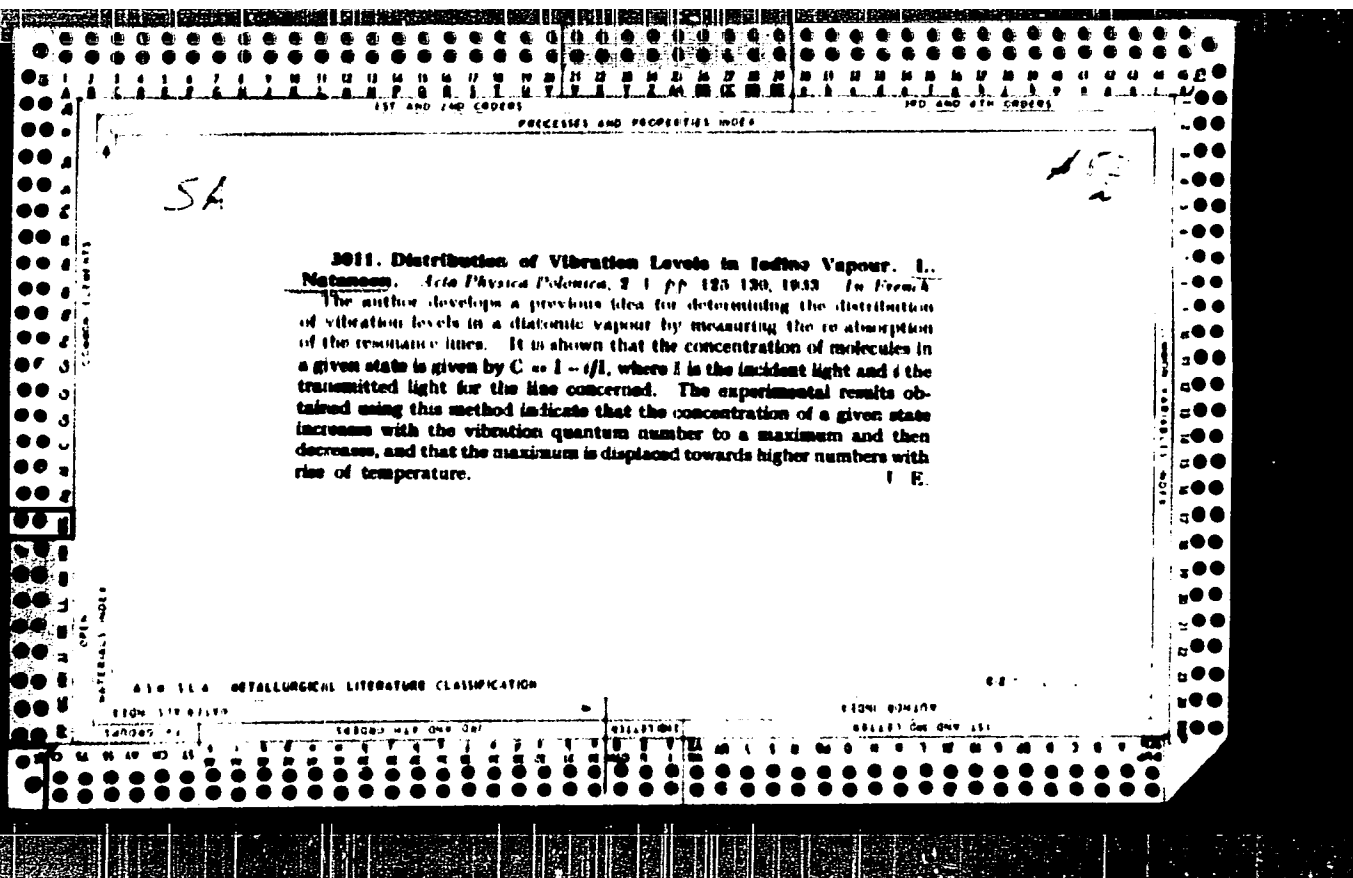
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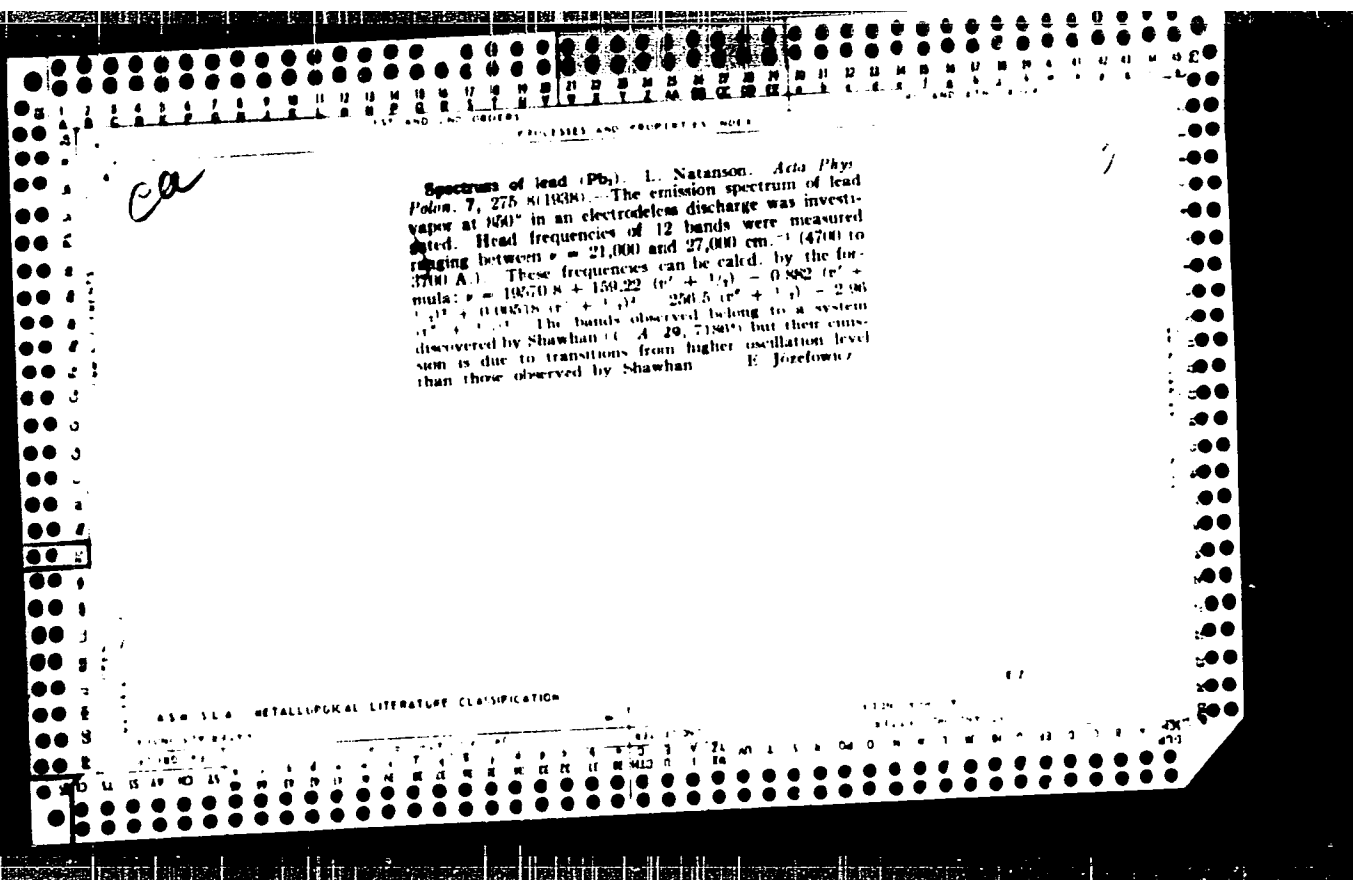
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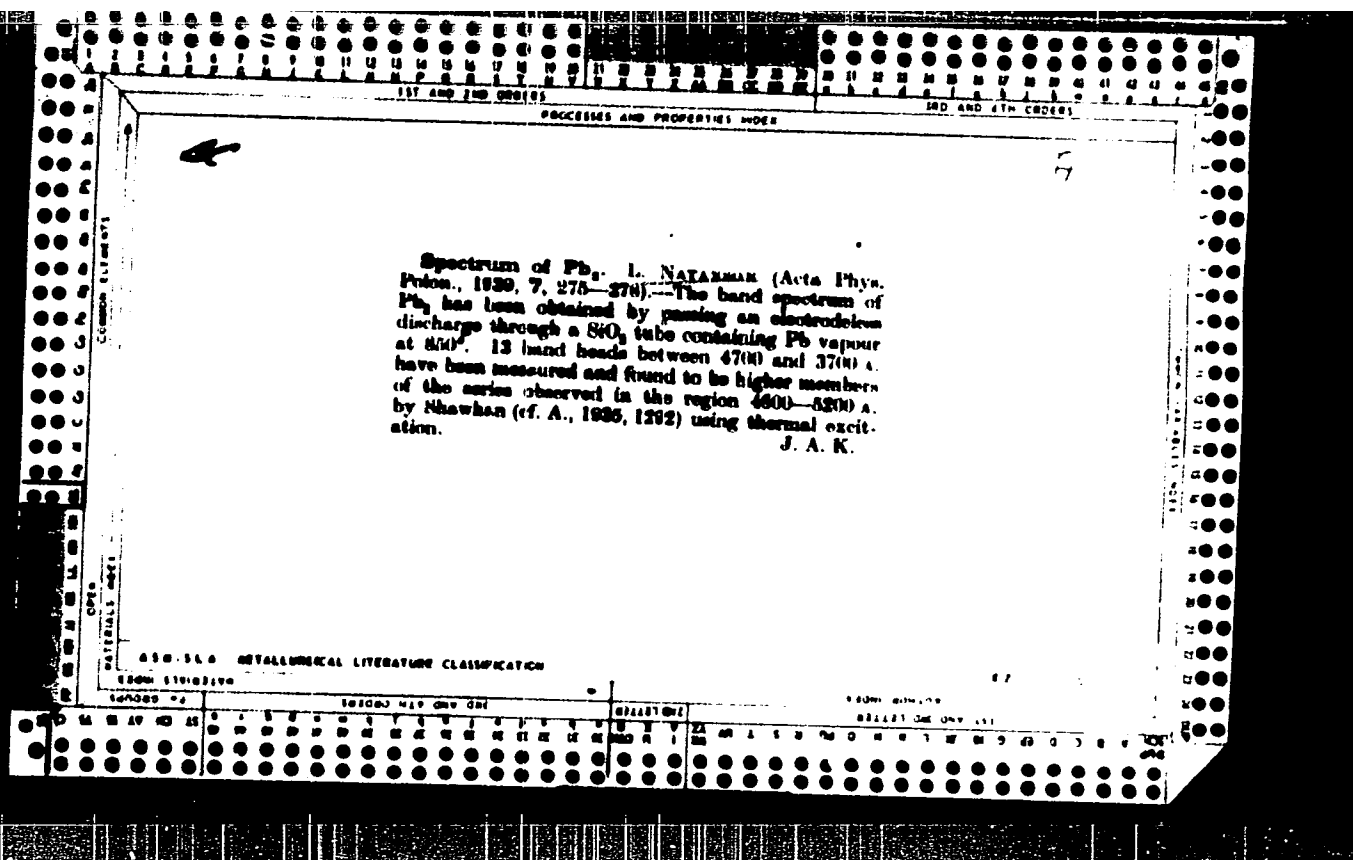
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157 AND 158 INDEX		159 AND 160 INDEX	
PROCEDURES AND PROPERTIES INDEX			
51 4531 2077. Steady Fields of Radiation. L. Motzmann. Acad. Polonaise Sci. et Lettres. Bull. 62, pp. 200-204, Nov., 1953. In English.—The unsteady propagation of radiation moving in a medium whose refractive index varies both with position and with time, is discussed. Special attention is paid to the case when the radiation fills the whole of space so that a steady state can be obtained. G. C. 1957.			
453-154 METALLURGICAL LITERATURE CLASSIFICATION			
BOOK SYMBOLS		BOOK SYMBOLS	
157 AND 158 INDEX		159 AND 160 INDEX	





NATANSON, L.

"Experimental researches on photomesons" p. 261 (postępy fizyki, Vol. 4, No. 3,
1953, Warszawa)

SO: Monthly List of ^{East European} ~~Russian~~ Accessions, Vol. 3, No. 3, March 195⁴, Uncl.
Library of Congress,

NATANSOON, L.

10 L.

Absorption in aluminum of the positron radiation of nitrogen¹⁴. T. Grabowski and L. Natanson. *Bull. Acad. Sci. USSR, Classe III*, 2, 379-384 (1954). The positrons produced from ^{14}N were then intercepted by Al plates placed in front of the Geiger-Müller counter. The av. thickness of the plates was 0.259 mm, and the source to counter window distance was 100 mm. A plot is shown of the log of the no. of counts vs. absorber thickness. It shows 2 sections, a rectilinear downward sloping section and a horizontal section. The value of the absorption coeff. as computed from the measurements is $\mu = 10.8 \pm 0.3 \text{ sq. cm./g.}$ and the practical range is $R = 0.47 \pm 0.01 \text{ g./sq. cm.}$ The max. energy of the spectrum was found to be 1.185 e.v.

K. R. Heine

NATANSON, L.
~~NATANSON, L.~~

MALUSZYŃSKA, K.
 SURNAME (in case); Given Name

Country: Poland

Academic Degrees: Not stated
 Department of Experimental Physics, Łódź University
 (Katedra Fizyki Doświadczalnej, Uniwersytet, Łódź)

Affiliation: Warsaw, Bulletin de l'Académie Polonaise des Sciences,
Série des Sciences Mathématiques, Astronomiques et
Physiques, Vol 9, No 2, Feb 61, pp 116-122.

Source:

Data: "Azimuthal Angular Distribution of alpha Particles
 from the $^{10}\text{B}(\alpha, \gamma)^7\text{Li}$ Reaction with Polarized
 Thermal Neutrons."

Co-authors:
 NATANSON, L. Academic degree not stated, Institute of Nuclear
 Research, Polish Academy of Sciences (Instytut Badań
 Jądrowych, PAN - Polska Akademia Nauk)
 Tsan-Hua-Tung, Academic degree not stated, Institute of
 Experimental Physics, Warsaw University (Instytut Fizyki
 Doświadczalnej, Uniwersytet, Warszawa)

24 6500,

S/058/62/000/008/022/134
A062/A101

AUTHORS: Małuszyńska, K., Natanson, L., Turkiewicz, J., Żuprański, P.

TITLE: Angular distribution of fast neutrons elastically scattered on Ca

PERIODICAL: Referativnyy zhurnal, Fizika, no. 8, 1962, 47 - 48, abstract 8B340
(Bull. Acad. polon, sci. Sér. sci. math., astron. et phys., 1961,
v.9, no. 8, 621 - 623, English; summary in Russian)

TEXT: Measurements of elastically scattered neutrons were conducted simultaneously at 30° , 60° , 90° , 120° , and 150° . The neutrons were recorded using an Agfa K2 100- α photographic emulsion. A Ca specimen 3 cm high and 2 cm in diameter was irradiated by a collimated neutron beam from the BBP-C(VVR-S) reactor. The lower limit of the neutron energy spectrum could not be lower than 1 Mev on account of the background. Angular distribution curves are presented for scattered neutrons in the 1 - 2 and 2 - 3 Mev ranges. Attention is directed onto the forward-backward asymmetry. To explain this circumstance, one has to allow for a direct interaction between neutron and nucleus, besides the scattering process from the composite nucleus.

[Abstracter's note: Complete translation]

Ye. Koltypin

Card 1/1

IGLEWSKI, S.; MALUSZYNSKA, K.; NATANSON, L.; TURKIEWICZ, J.; ZUPRANSKI, P.

Further measurements of the angular distribution of fast neutrons elastically scattered on Ca. Acta physica Pol 23 no.6:843-844 Je '63.

1. Department of Experimental Physics, University, Lodz (for Iglewski, Maluszynska). 2. Institute of Nuclear Research, Polish Academy of Sciences, Swierk by Otwock (for Natanson, Turkiewicz, Zupranski).

NATANSON, Ludwik

The reactor as research tool in nuclear physics. Postepy
fiziki 14 no.6:667-671 '63.

1. Instytut Badan Jadrowych, Swierk.

NATANSON, Ludwik, prof. dr

The physical world as a complex of quantum fields. 1977.
1. 1977, no. 3 134-135, 14.

1. 1977, Department of Experimental Physics, University of 1977.

ACC NR: AP6013882

(A)

SOURCE CODE: UR/0073/65/031/011/1164/1167

AUTHOR: Khimchenko, Yu. I.; Ul'berg, Z. P.; Frikhed'ko, G. P.; Ivanova, Ye. I.; Kabakchi, A. M.; Moleshevich, A. P.; Natanson, L. M.

ORG: Institute of Physical Chemistry im. I. V. Priborovskiy, AN UkrSSR (Institut fizicheskoy khimii AN UkrSSR)

TITLE: Effect of gamma irradiation on the structure of epoxy resin and metallopoly-
mers based on epoxy resin

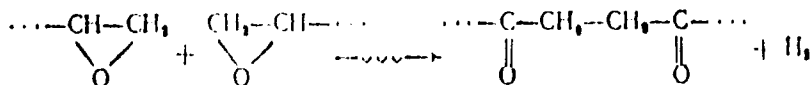
SOURCE: Ukrainskiy khimicheskij zhurnal, v. 31, no. 11, 1965, 1164-1167

TOPIC TAGS: Gamma irradiation, irradiation effect, epoxy plastic, metallopolymer
material, IR spectroscopy, resin

ABSTRACT: Infrared spectroscopy in the range of 600-2000 cm^{-1} was used to determine the effect of Co^{60} gamma radiation on ED-5 epoxy-diane resins, and on metallopolymer from these resins containing 1 and 6% copper and 5% lead. In the resins, a new band (corresponding to carbonyl groups) was found at about 1720 cm^{-1} which increased substantially in intensity as the irradiation was continued. At the same time, the integral intensity of the 915 cm^{-1} band decreased. This is thought to be due to the opening of epoxy rings with the formation of carbonyl groups:

UDC: 621.039.55

ACC NR: AP6013082



A dose of $4 \cdot 10^{18}$ rad was found to decrease the content of epoxy groups by 23-25% in the ED-5 resin. Introduction of colloidal copper and lead leads to a greater reduction in the number of epoxy groups (40% for 1% copper, 55% for 6% copper, and 60% for 5% lead). This suggests that during the irradiation, the colloidal metals cause an increase in molecular weight at the expense of the opening of epoxy rings. Orig. art. has: 3 figures.

SUB CODE: 07, 11/ SUBM DATE: 30Jun64/ ORIG REF: 005

Card 2/2//L.P

KOSTETSKIY, B.I.; IVZHENKO, I.P.; NATANSON, M.E.

Methods of studying the profile of sparking spots formed in
the spectral analysis of the friction surfaces of machine
parts. Zav. lab. 28 no.9:1081-1083 '62. (MIRA 16:6)

1. Kiyevskiy institut Grashdanskogo vездushnogo flota.
(Spectrum analysis)
(Materials—Testing)

ACCESSION NR: AP4029205
AUTHOR: Kostetskiy, B. I.; Belitskiy, M. Ye.; Natanson, M. E.
TITLE: Determination of carbon and silicon in nickel base powder sealing materials using spectral analysis
SOURCE: Poroshkovaya metallurgiya, no. 2, 1964, 40-45
S/0226/64/000/002/0040/0045

TOPIC TAGS: powder metallurgy, nickel, silicon, graphite, nickel base material, silicon containing material, graphite containing material, carbon, spectral analysis
ABSTRACT: The purpose of this paper is to study the necessity of conducting layer-by-layer spectral analysis in order to show the changes in the chemical composition of surface layers and alloys are under certain conditions. The analysis was conducted at a 0.005 mm in a standard 3-lens condensor system. Exposure of the following analytic pairs of lines were chosen: Ni I 2881.58 Å-Ni II 2864.15 Å. Spectral analysis made it possible to select

ACCESSION NR: AP4029205

materials that were more stable in chemical composition and durability. In conclusion, the authors claim that existing materials for seals should be more rationally used by taking into account the changes to which they are subjected during their exploitation. Orig. art. has: 5 figures and 1 table.

ASSOCIATION: Kiyevskiy institut grazhdanskogo vozdušnogo flota
(Kiev Institute of Civil Aviation)

SUBMITTED: 07Jun63

ATD PRESS: 3081

ENCL: 00

SUB CODE: MM, OP

NO REF SOV: 005

OTHER: 000

Card

2/2

KOSTETSKIY, B.I. [Kostets'kyi, B.I.]; NATANSON, M.E.; SKARCHENKOV, K.Z.;
TOPEKHA, P.K.

Selection of additives for lubricating oils. Dop. AN URSR
no.11:1494-1497 '64. (MIRA 18:1)

1. Kiyevskiy institut Grazhdanskogo vozduhnogo flota.
Predstavleno akademikom AN UkrSSR F.D. Ovcharenko.

KOCHETKIN, B.I., prof.; YEDIGARYAN, F.S., Inzh.; NATANSON, M.S., Inzh.

Changes in chemical composition of very fine layers of oil on surfaces
of antifriction bearings during their operation. Izv.vysk. i obshch.
mashinostr. no.5:52-54 '64. (MIR) (8.12)

1. Kiyevskiy Institut Grazhdanskogo vozdushnogo flota.

L 00113-66 DMT(m)/EPF(e)/T BW/DJ/GS

REFERENCE NO: AT9020432

UR/0000/65/000/000/0057/0060

AUTHORS: Kostetskiy, B. I.; Matanov, M. E.; Sharenkov, K. Z.; Topolova, P. E.

TITLE: Choice of additives for lubrication oils

SOURCE: AN SSSR. Nauchnyy sovet po treniya i smazke. Teoriya smazochnogo daystviya i novyye materialy (Theory of lubricating action and new materials). Moscow, Izd-vo Mashin, 1965, 57-60

TOPIC TAGS: lubricant, lubricant additive, additive / KIOVF 1 additive, KIOVF 2 additive, MS 20 lubricating oil, KE 4 friction apparatus

ABSTRACT: New, highly effective lubrication oil additives consisting of rhodanides and dithionates of copper, iron, cobalt, and manganese, as well as complex sulfur- and fluorine-containing compounds (KIOVF-1, KIOVF-2), were developed. These additives were tested in aviation oil MS-20 over a range of conditions on friction machine KE-4 (B. I. Kostetskiy. Soprotivleniye iznashivaniyu metallov. M., Mashgis, 1959). It was found that addition of copper rhodanide decreased wear by a factor of 2 (at $V = 300$ rpm, $P = 40$ kg/cm²), doubled the maximum possible load (to 2750 kg/cm²), and quadrupled the speed at which binding occurs

Card 1/2

L 00513-66

ACCESSION NR: AT5020432

(to 13.10 m/sec) as compared with MS-20 performance without additives. Addition of KHV-1 (optimum concentration corresponds to 0.5-1.5% S in oil) gave corresponding improvement factors of 4-7, 1.6-2.1, and 4.5; KHV-2 (0.45-1.5% concentration) gave 2-3, 1.3-1.9, and 2- to 4-fold improvements. Since the effectiveness of these additives depends on their chemical interaction with the surface, spectral analysis was performed to determine the Fe, C, N, S content in the external layers of the bearing surface. It was found that if for pure MS-20 the concentration of Fe, C, N, and S was 1, 1, 1, and 1, then addition of Cu rhodanide resulted in values of 0.81, 1.8, 9, and 4; addition of KHV-1 gave 0.70, 2.1, 5, and 2.5 respectively. Orig. art. has: 2 tables.

ASSOCIATION: Nauchnyy sovet po treniyu i smazke, AN SSSR (Scientific Committee on Friction and Lubrication, AN SSSR)

SUBMITTED: 22 May 65

ENCL: 00

SUB CODE: FF

NO REF SOV: 610

OTHER: 000

Card 2/2

1. 40904-65 EMT(m)/EPF(c)/EMP(w)/EMA(d)/T/EMP(t)/EMP(l) JD/DJ
ACCESSION NR: AP5009279 8/0369/65/001/001/0032/0039

AUTHOR: Kostetskiy, B.I.; Kulennichenko, L.F.; Ostrovoy, Yu. D.; Natanson, M.; 3/
Skarchenkov, K.Z.; Topekha, P.K.

TITLE: Additives to lubricating oils and their action during friction

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 1, no. 1, 1965, 32-39

TOPIC TAGS: lubricating oil, oil additive, metal friction, surfactant additive, contact friction, metal thiocyanate, metal dithizonate, friction couple

ABSTRACT: After discussing the mechanisms by which a lubricant operates in contact friction between metals and pointing out the desirable effects of additives, the authors review the reported data on surface-active additives and chemically active additives to lubricants. The changes brought about by surface-active additives in the contact surface of the metal under conditions of friction are considered (changes in plastic deformation of the surface of dislocations and in the intragranular

and dithizonates are reviewed, and their effects are illustrated by the example of an armco
Card 1/2

L. 40904-65

ACCESSION NR: AP5009279

armco friction couple. Orig. art. has: 4 figures and 1 table.

ASSOCIATION: KIGA, Kiev

SUBMITTED: 15Sep64

ENCL: 00

SUB CODE: FP, MM

NO REF SOV: 013

OTHER: 000

"APPROVED FOR RELEASE: 03/13/2001

CIA-RDP86-00513R001136120010-6

1. (S) (U) (C) (M) (A) (R) (T) (E) (D) (F) (O) (R) (R) (E) (L) (E) (A) (S) (E) (0) (3) (1) (3) (2) (0) (0) (1) (0) (6)

2. (S) (U) (C) (M) (A) (R) (T) (E) (D) (F) (O) (R) (R) (E) (L) (E) (A) (S) (E) (0) (3) (1) (3) (2) (0) (0) (1) (0) (6)

APPROVED FOR RELEASE: 03/13/2001

CIA-RDP86-00513R001136120010-6"

L 23468-66 EPF(n)-2/EWT(m)/EWA(d)/EWP(t) IJP(c) JD/RW/JG/WB

ACC NR: AP6008061

SOURCE CODE: UR/0032/66/032/002/0151/0152

AUTHOR: Chernyy, V. G.; Matanson, M. E.; Baturinskaya, M. L. 59

ORG: Institute of Casting Problems, Academy of Sciences, USSR (Institut problem lit'ya Akademii nauk USSR) B

TITLE: Electrolytic extraction of Ni_3Nb from nickel-based alloys 6 27 27

SOURCE: Zavodskaya laboratoriya. v. 32, no. 2, 1966, 151-152

TOPIC TAGS: nickel base alloy, electrolytic refining, intermetallic compound, niobium, electrolyte, metal extracting

ABSTRACT: Various intermetallic compounds (Ni_3Al , Ni_3Ti , Ni_3Nb) may exist in alloys of the Nimonic type depending on the alloying elements and their concentration. An electrolyte is proposed for extracting Ni_3Nb from alloys of this type and preventing oxidation of this intermetallic compound in the anodic space. Various electrolytes were tested on an alloy composed of 66.6% Ni, 20% Cr, 10% Nb, 2.5% Ti and 0.7% Al. The alloy was studied after quenching from 1100°C. The best electrolytes were aqueous solutions containing 10% ammonium chloride and 5% glucose, citric acid or oxalic acid. The compositions of the electrolytes and data on the quantity of intermetallic phase are given in the table. X-ray structural analysis showed that all precipitates produced during electrolysis are intermetallic Ni_3Nb . Electrolytes 1 and 2 give preci-

L 23468-66

ACC NR: AP6008061

pitates without impurities and may be used for isolating Ni_3Nb at room temperature. The precipitate adheres tightly to the specimen, obviating the need for dialysis. Orig. art. has: 1 table.

Electrolyte compositions and yield of intermetallic phase conditions of electrolysis:
 $i = 0.1 \text{ g/cm}^2$, $\tau = 1.0 \text{ hr}$, $t = +20^\circ\text{C}$

No.	Composition	Yield, %
1	Ammonium chloride 100 g Glucose 50 g Water 800 ml	29.0
2	Ammonium chloride 100 g Hydrochloric acid (1.19) 50 ml Water 800 ml	29.3
3	Ammonium chloride 100 g Citric Acid 50 g Water 800 ml	32.1
4	Ammonium chloride 100 g Oxalic acid 50 g Water 800 ml	32.3

SUB CODE: //

SUBM DATE: 00/

ORIG REF: 000/

OTH REF: 000

NATANSON, M. S.

"On the self-quenching of a discharge by the action of its own field." (p. 448)

SO: ZHURNAL EKSPERIMENTALNOI I TEORETICHESKOI FIZIKI 1953 Vol. 25 No. 4 (10)

NATANZON, M.S.

U S S R .

41. On the self-dispersion of charge under the action of its own field. M. S. NATANZON. Zh. eksper. teor. Fiz., 15, No. 4 (1950), 1045-1048, 1048a.

In view of the results of Abstr. 5512 (1950) in which the stability of charge distributions with definite form factors was demonstrated, the question is treated generally for any form factor in the framework of the theory of a classical electron. Starting from the Maxwell-Lorentz equations, the variational associated with a small change in the charge distribution are written down. A characteristic equation results, the analysis of whose roots leads to the conclusion that for real masses self-dispersion of charge would not take place, independently of the form factor.

W. J. SWIATECKI

L1109

S/179/62/000/004/003/010
E031/E435

AUTHOR: Natanzon, M.S. (Moscow)

TITLE: The parametric oscillations of a pipe excited by a pulsating flow of fluid

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Mekhanika i mashinostroyeniye, no.4, 1962, 42-46

TEXT: The pipe is fixed to two supports with the distance "L" apart. The velocity of the fluid is given by the equation

$$u = V + \delta u_0 \sin \gamma t = V + \delta u \quad (1.1)$$

where u - velocity, V - constant, δu_0 - amplitude of the velocity and γ - frequency of oscillation. The loading is determined by the centrifugal and Coriolis forces. An approximate equation for the oscillations of the pipe is used, which is accurate to terms of the third order of smallness in z , the vertical displacement of the centre line of the pipe. The method of Galerkin is used to solve the equation, assuming the form of the oscillations to be given by $z = z_0 \sin \frac{\pi s}{L}$ (1.5)

Card 1/2

The parametric oscillations ...

S/179/62/000/004/003/010
E031/E435

A second order differential equation is obtained for z_0 and a solution is sought for this in the form

$$z_0 = a \cos \left(\frac{1}{2} \omega t + \psi \right) \quad (1.10)$$

corresponding to the principal parametric resonance. It is shown that the relation between the amplitude of the oscillations and the frequency has a typical hysteresis loop in the region of frequencies near to 2ω , ($\omega^2 = \pi^4 EI/mL^4 (1 - \mu^2 v^2)$) where m is the mass of the pipe taking account of the fluid and $\mu = (L/\pi) (m/EI)^{1/2}$. It is shown that in a parametric resonance regime the dynamical properties of a column of fluid change significantly; there is a pressure loss which is independent of the velocity, a loss of the viscous friction type and there is a change in the inertia of the column.

SUBMITTED: May 14, 1962

Card 2/2

L 53589-65 EWP(m)/EWP(w) EM

ACCESSION NR: AP5013128

UR/0373/65/000/002/0033/0042

AUTHOR: Natanson, M. S. (Moscow)

TITLE: Forced discontinuous oscillations of fluids in pipelines

SOURCE: AN SSSR. Izvestiya. Mekhanika, no. 2, 1965, 33-42

TOPIC TAGS: fluid oscillation, liquid fuel, fuel feed system, vibrations, wave propagation, combustion instability, fuel feed line

ABSTRACT: An analysis was made of oscillations propagating through a liquid contained in a vertical tube which is confined at the upper end by a large-diameter vessel kept at a constant level and pressure and at the lower end by a piston which imparts vibrations to the liquid. The analysis yielded expressions correlating the amplitude and frequency of acoustic and nonacoustic oscillations. The results showed that the amplitude of acoustic oscillations decreases with decreasing frequency, while the amplitude of shock waves increases. The dimensionless pressure amplitude of shock waves was found to be dependent on the pressure in the tank, while that of acoustic oscillations was independent of the pressure. Orig. art. has: 50 formulas and 6 figures.

[AC]

Card 1/2

L 53589-65
ACCESSION NR: AP5013128
ASSOCIATION: none
SUBMITTED: 14 Nov 64 ENCL: 00 SUB CODE: ME, FP
NO REF GOV: 005 OTHER: 002 ATD PRESS: 4015

BAB
Card 2/2

NATANSON, N.S.

USSR/General Biology. Physical and Chemical Biology B-1

Abs Jour : Ref Zhur - Biol., No 22, 1958, No 98306

Author : Natanson N.S.

Inst : AS Latv SSR

Title : Influence of Trace Elements Upon the Colloid-
Chemical Nature of Protoplasm

Orig Pub : Izv. AN LatvSSR, 1956, No 9, 69-74

Abstract : The trace elements' influence upon the viscosity and permeability of protoplasm in cells of different plants had been examined. Trace elements' concentrations are $1 \cdot 10^{-6}$ - $1 \cdot 10^{-1}$ moles per liter; experiments with bidistilled water served as control. Viscosity was determined by the change of form and time in plasmolysis. It has been proven that the low concentrations of trace elements provoke an increase of viscosity in protoplasm and the high concentrations produce a decrease in its viscosity. All trace elements

Card : 1/2

117 AND 7TH MOORE										100 AND 6TH MOORE									
PAGES AND PROPERTIES INDEX																			
Action of Hydrogen Peroxide on colloidal silica. V. E. Krasovskaya and M. R. Krasova (Zashchita Stalotv., U.S.S.R., 1957, 7, 911-914). The action of H₂O₂ on (1) degumming agent, (2) stabilizing agent, and (3) dispersing agent has been studied on SiO₂ sols. Only case, H₂O₂ produces coagulation. Experiments on transformation and catalysis show that H₂O₂ acts as oxidant, but does not initiate the change. Through experimental results further that H₂O₂ does not produce the full oxidation of the material. The catalytic action of Fe²⁺ is attributed to the decomposition of the hydroperoxide properties of the sol, which can be due to (1) appearance of finely formed H₂O₂, (2) formation of the H₂O₂ to a different form of higher stability, and (3) removal of charge from the particles. Addition of small amounts of NaOH increases the % of H₂O₂ sol, while much addition of HCl reduces it. This is attributed to the effect of electroviscosity which increases with the concentration of H₂O₂, and decreases when the latter is reduced. W. R. A.																			
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION																			
STEEL SYNOPTIC										NON-FERROUS									
100000 *2										100000 *10 JNY JOE									
SYNOPSIS										EXTRACTS									
100000 *2										100000 *10 JNY JOE									

9. Monthly Lists of Russian Accessions, Library of Congress, March 1953. Unclassified.

NATANSON, N. E.

U.S.S.R.

Effect of certain microelements on the plasma viscosity of plants. N. E. Natanson. *Zapiski Leningrad. Sci'skhol'sk. Inst.* 1953, No. 7, 93-104. Referat. *Zhur., Khim.* 1954, No. 29017.—The study covered the effect of B, Mn, Zn, and Cu on the viscosity of plasma of onion and partially of flax and wheat. The viscosity changes of the plasma were measured by observing the form and time of plasmolysis. It was found that solns. of the microelements of very small concns. (10^{-4} - $10^{-5}M$) increased the viscosity while solns. of higher concns. (10^{-2} - $10^{-3}M$) decreased it. Cu and Zn showed the most pronounced effects. E. Wierbicki

SHKOL'NIK, M.Ya.; MATANSON, N.Ye.

Viscosity of the protoplasm in various sorts (according to drought resistance)
of wheat and barley and the effect of trace elements on it. Doklady Akad.
Nauk S.S.S.R. 88, 1067-70 '53) (MLRA 6:2)
(GA 47 no.21:11359 '53)

1. Leningrad. Agr. Inst.

USSR / Plant Physiology. Mineral Nutrition.

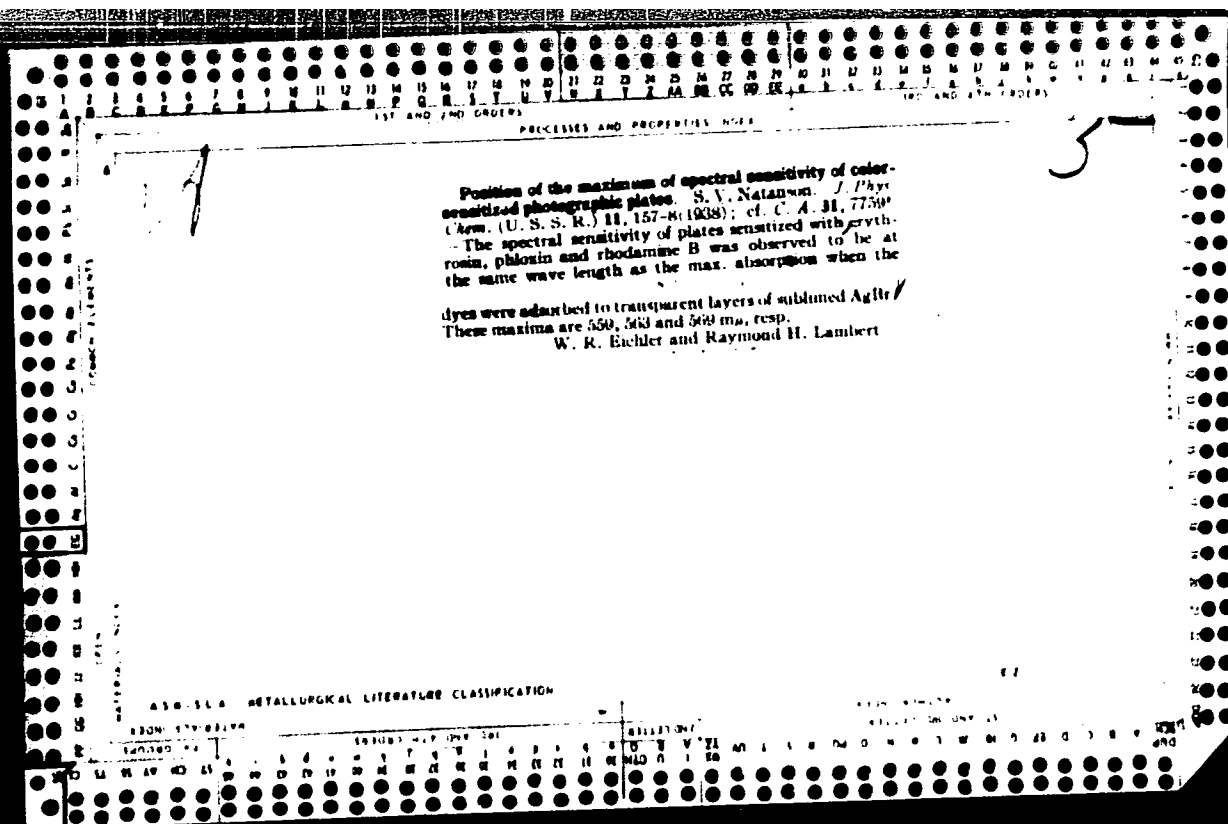
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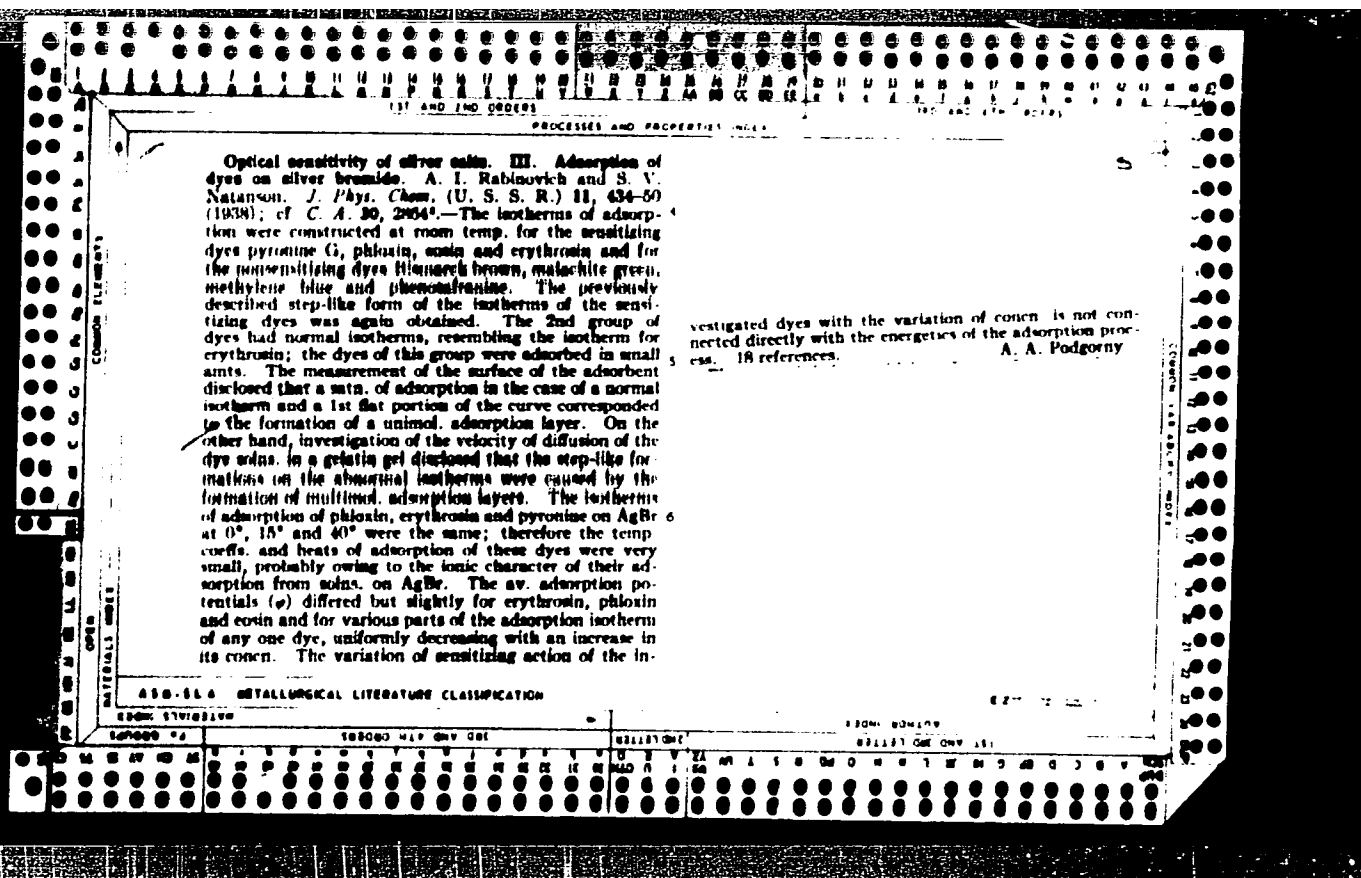
Abs Jour : Ref Zhur - Biol., No 9, 1958, No 38915

Author : Matanson, N. Ya.
Inst : ~~Institute~~ of Plant Physiology of Benningrad
Title : Changes of Some Colloidal-Chemical Properties of the
Protoplasm of Plants under the Influence Upon Them
of Micro-Elements.

Orig Pub : Zap. Leningr. s.-kh. in-ta, 1956, No 11, pp 396-402

Abstract : Before sowing, the seeds of beans, barley, and buckwheat were treated with solutions of boric acid and copper sulphate (0.5g/l), and sulphates of manganese and zinc (2g/l); likewise these solutions were introduced while watering the fullgrown plants in the proportion of 0.5 - 2 mg to 1 kg of soil. In the cells of the epidermis of the leaves and stalks, the viscosity of the protoplasm was determined by the plasmolytic method. Under the action of micro-elements, the viscosity increased





NATANSON, Sof'ya Vasil'yevna

"Investigations on the Optical Sensitization of Silver Halides," Acta Phys.,
No.1, 1939

Sci.Res. Chem. Inst. im. Karpov, Moscow
Sci. Assoc., Cinephotography, Moscow

BC

Optical constitution of silver halides. VII.
Spectral sensitivity and absorption spectrum of
sensitized layers of silver bromide. M. NATANSON
(Acta Physicochim. U.R.S.S., 1939, 11, 67-74; cf.
B., 1937, 1137).—The absorption curves of erythrosin,
phloxin, rhodamine B, and indocyanin adsorbed on
transparent sublimed layers of AgBr have been
measured and shown to correspond exactly with the
sensitivity curves for the same systems. O. D. N.

